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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,440	08/01/2001	Koichi Maruyama	P21012	4706

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EXAMINER

AMARI, ALESSANDRO V

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 09/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/918,440

Applicant(s)

MARUYAMA, KOICHI

Examiner

Alessandro V. Amari

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 6, 7, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Broome et al. U.S. Patent 6,088,322.

In regard to claim 1, Broome et al. discloses (see Figure 5) an objective lens for an optical pick-up, at least one surface of said objective lens being an aspherical surface as shown in Figures 5 and 8 and as described in column 5, lines 43-45, said at least one surface being divided into an effective area (25) and an outer area (26) outside said effective area, said effective area and said outer area being formed such that a predetermined gap is caused between a spherical aberration of a light beam passed through said effective area and a spherical aberration of a light beam passed through said outer area as described in column 4, lines 9-26, a diffraction lens structure being formed on said at least one surface within said effective area as described in column 5, lines 43-46, said outer area being connected with a base curve which is a macroscopic shape of said at least one surface within said effective area as shown in Figure 5, the light beam passed through said effective area forming a beam spot on a predetermined surface as shown in Figure 5, the light beam passed through said outer area being diffused on the predetermined surface in comparison with the beam spot as

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described in column 7, lines 23-28. Inherently, the beams outside of areas 26 in Figure 5 are no longer focused by diffraction and are therefore focused on a predetermined as compared to the beam spot.

In regard to claims 6 and 7, Broome et al. discloses (see Figure 5) an objective lens for an optical pick-up, at least one surface of said objective lens being an aspherical surface, as shown in Figures 5 and 8 and as described in column 5, lines 43-44, said at least one surface being divided into an effective area (25) and an outer area (26) outside said effective area, a diffraction lens structure being formed on said at least one surface within said effective area as described in column 5, lines 43-46, said outer area being connected with a base curve which is a macroscopic shape of said at least one surface within said effective area as shown in Figure 5, said effective area and said outer area being formed such that the light beam passed through said effective area forming a beam spot on a predetermined surface as shown in Figure 5, the light beam passed through said outer area being diffused on the predetermined surface as described in column 7, lines 23-28. Inherently, the beams outside of areas 26 in Figure 5 are no longer focused by diffraction and are therefore focused on a predetermined as compared to the beam spot.

Regarding claims 2 and 8, Broome et al. discloses that said diffraction lens structure including a plurality of concentric annular zones formed on said at least one surface as shown in Figure 12.

Regarding claim 10, Broome et al. discloses said outer area being configured such that a predetermined gap is provided between a spherical aberration of the light

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beam passing through said effective area and a spherical aberration of a light beam passing through said outer area as described in column 4, lines 9-50.

3. Claims 1, 2, and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoo et al. U.S. Patent 6,043,912.

In regard to claim 1, Yoo et al. discloses an objective lens for an optical pick-up as described in column 3, lines 19-20, at least one surface of said objective lens being an aspherical surface as shown in Figure 7, said at least one surface being divided into an effective area (353 or region F in Figure 5A with 353 shown as integrally formed with aspheric lens in Figure 7) and an outer area (355 or region E in Figure 5A) outside said effective area, said effective area and said outer area being formed such that a predetermined gap is caused between a spherical aberration of a light beam passed through said effective area and a spherical aberration of a light beam passed through said outer area as described in column 5, lines 16-21, a diffraction lens structure (see 353 in Figure 5A and as shown in Figure 7) being formed on said at least one surface within said effective area as described in column 6, lines 36-44, said outer area being connected with a base curve which is a macroscopic shape of said at least one surface within said effective area as shown in Figure 7 and as described in column 7, lines 12-19, the light beam passed through said effective area forming a beam spot on a predetermined surface, the light beam passed through said outer area being diffused on the predetermined surface in comparison with the beam spot as described in column 6, lines 1-7.

In regard to claims 6 and 7, Yoo et al. discloses an objective lens for an optical pick-up as described in column 3, lines 19-20, at least one surface of said objective lens being an aspherical surface as shown in Figure 7, said at least one surface being divided into an effective area (353 in Figure 5A with 353 shown as integrally formed with aspheric lens in Figure 7) and an outer area (355 or region E in Figure 5A and shown integrally formed with aspheric lens in Figure 7) outside said effective area, a diffraction lens structure (see 353 in Figure 5A and as shown in Figure 7) being formed on said at least one surface within said effective area as described in column 6, lines 36-44, said outer area being connected with a base curve which is a macroscopic shape of said at least one surface within said effective area as shown in Figure 7 and as described in column 7, lines 12-19, said effective area and said outer area being formed such that the light beam passed through said effective area forming a beam spot on a predetermined surface, the light beam passed through said outer area being diffused on the predetermined surface as described in column 6, lines 1-7.

Regarding claims 2 and 8, Yoo et al. discloses that said diffraction lens structure including a plurality of concentric annular zones formed on said at least one surface as described in column 6, lines 41-42 and as shown integrally formed in Figure 7 which is further described in column 7, lines 13-20.

Regarding claims 5 and 9, Yoo et al. discloses that said at least one surface in said outer area is a continuous surface having no diffraction lens structure as shown in Figure 5A as region E which is shown integrally formed with the aspheric lens in Figure 7 outside the diffractive structures.

Regarding claim 10, Yoo et al. discloses that said outer area being configured such that a predetermined gap is provided between a spherical aberration of the light beam passing through said effective area and a spherical aberration of a light beam passing through said outer area as described in column 5, lines 16-21.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 4, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Broome et al. U.S. Patent 6,088,322.

Regarding claims 3 and 4, Broome et al. discloses the invention as set forth above but does not teach an absolute value of said gap is equal to or greater than 10 micrometers or an absolute value of said gap is approximately 200 micrometers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the gaps having the specified values, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

6. Claims 3, 4, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoo et al. U.S. Patent 6,043,912.

Regarding claims 3 and 4, Yoo et al. discloses the invention as set forth above but does not teach an absolute value of said gap is equal to or greater than 10

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micrometers or an absolute value of said gap is approximately 200 micrometers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the gaps having the specified values, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

7. Applicant's arguments filed 09 July 2002 have been fully considered but they are not persuasive.

The applicant argues that the prior art of record, Broome et al. does not describe the feature of a predetermined gap between a spherical aberration of a light beam passing through an effective area and an outer area. The applicant then cites the portion of the reference cited by the examiner (column 4, lines 9-26) as teaching different numerical apertures (NA), which introduce different amounts of spherical aberration but not the predetermined gap.

In response to this argument, the examiner would like to point out that the claim language recites "... a predetermined gap is caused **between a spherical aberration of a light beam passed through said effective area and a spherical aberration of a light beam passed through said outer area**" and that the word "gap" is defined as "a break in continuity" (Merriam-Webster's Collegiate Dictionary, Tenth ed., 1999).

Therefore, examination of Figure 5 clearly shows that there must be a break in continuity (i.e., a predetermined gap) between the spherical aberration of a light beam passed through one area (25, corresponding to an .45NA) and a spherical aberration of

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a light beam passed through an outer area (26, corresponding to an .60 NA). This is supported by the citation in Broome et al., which discloses that the .60 NA introduces nearly 2.4 times the spherical aberration than the .45 NA introduces.

The applicant further argues that the surface upon which a diffractive is imposed is a spherical surface rather than an aspherical surface as recited in the applicant's claim.

In response to this argument, the Applicant's attention is directed to figure 5 and column 4, lines 2-5 which teach, "This is a molded COC (Cyclic Olefin Copolymer) plastic lens 20 with **aspheric first surface 21 and aspheric second surface 22.**" Furthermore, the diffractive is imposed upon aspheric surface 22 as shown in Figures 5 and 8.

The applicant further argues that Broome et al. does not disclose that the light beam passing through the outer area is diffused on a predetermined surface in comparison with a beam spot.

In response to this argument, the examiner would like to point out that the applicant provides no evidence for this argument but instead simply asserts that the claim language does not read on the prior art. Since the applicant did not respond to the prima facie case as presented by the examiner, the rejection in this regard, stands.

The applicant also argues that the prior art of record, Yoo et al. does not teach that the surface upon which the diffraction lens is formed is aspherical.

In response to this argument, the Examiner directs the applicant's attention to the left side of Figure 7 of Yoo et al., which clearly shows an aspherical (i.e., departing slightly from the spherical) surface upon which a diffractive lens is formed.

The applicant further argues that in Yoo et al., the wavelength of the beam passing through the region F outside the region A of the holographic lens is diffracted and that region F is also part of the holographic ring lens.

In response to this argument, the Examiner notes that the Applicant has failed to point out how the beam passing through the region F being diffracted relates to the claim structure as recited or why the prior art, Yoo et al. does not in fact, read on the recited claims. Again, Examiner would like to point out element 353 or region F in Figure 5A is shown as integrally formed with the aspheric lens as shown in Figure 7.

The applicant further argues that in his invention, the outer area is a refractive surface without a diffractive lens structure and is configured to be connected with a base curve of the effective area.

In response to this argument, the Examiner would like to point out that none of the claims recite an outer area being a refractive surface without a diffractive lens structure.

The Applicant also argues that there is no support in Yoo et al. for the predetermined gap as recited in claim 1.

In response to this argument, the examiner would like to point out that the claim language recites "... a predetermined gap is caused **between a spherical aberration of a light beam passed through said effective area and a spherical aberration of a**

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light beam passed through said outer area" and that the word "gap" is defined as "a break in continuity" (Merriam-Webster's Collegiate Dictionary, Tenth ed., 1999).

Therefore, examination of Figure 5A of Yoo et al. clearly shows that there must be a break in continuity (i.e., a predetermined gap) between the spherical aberration of a light beam passed through one area (F or 353, corresponding to an .5 NA) and a spherical aberration of a light beam passed through an outer area (E or 355, corresponding to an .60 NA).

The Applicant also argues the examiner's assertion of obviousness is inappropriate since the applicant maintains that the primary references do not disclose a gap and as related to optimum values applies only in a situation where it is known in the prior art that the parameter that is being optimized is a significant parameter.

In response to this argument, the examiner maintains that the primary references do indeed teach a predetermined gap (see response to argument above). Furthermore, the parameter being optimized (i.e., spherical aberration of a light beam passed through said effective area and a spherical aberration of a light beam passed through said outer area) is a significant parameter in that the spherical aberration will not be eliminated unless the predetermined gap is optimized for the particular medium (CD or DVD).

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alessandro V. Amari whose telephone number is (703) 306-0533. The examiner can normally be reached on Monday-Friday 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on (703) 308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ava 
September 16, 2002


Cassandra Spyrou
Supervisory Patent Examiner
Technology Center 2800